

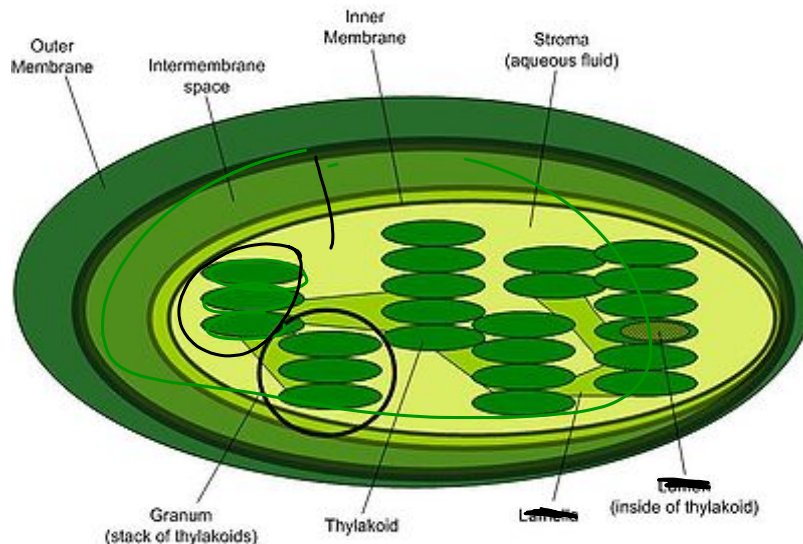
What is the connection between photosynthesis and cellular respiration?

Can animals live without plants?

Can plants live without animals?

Photosynthesis

- occurs in the chloroplasts of plants and plant-like protists



- Thylakoid membranes contain the chlorophyll
- granum(a) is a stack of thylakoids
- stroma is the fluid filled area around the grana

Photosynthesis is a 2 part reaction:

Part 1 Light Reaction (light dependent)

- light energy is absorbed by the chlorophyll in the thylakoid membranes
- the energy excites electrons in the chlorophyll
- once charged these electrons will be carried to the stroma as part of a compound called NADPH (think of this as shovel carrying hot coals from a fire to a new place to start another fire)
- the charged up electrons will be used to form glucose in part 2 of photosynthesis
- the electrons are in constant supply as they come from the breaking down of water. Enzymes found on the inner surface of the thylakoids break H_2O into H_2 and O_2 and electrons
- the H_2 will be used to make glucose and the O_2 will be released for organisms to use in cellular respiration

Part 2 Light independent reaction (Dark Reaction)

- occurs in the stroma --- light is not needed
- the charged up electrons from part 1 use their energy to combine the H₂ from water with CO₂ to form glucose



Formula:

Carbon dioxide + water → glucose + oxygen

